```
                        ;
                        ;       ECHO.- Resident System Process
                        ;       Print Command tail to console
                        ;


                        ;
                        ;       DEFINITIONS
                        ;

00E0                    ccpmint         equ     224     ;ccpm entry interrupt
0009                    c_writebuf      equ     9       ;print string
0093                    c_detach        equ     147     ;detach console
0094                    c_setnum        equ     148     ;set default console
0086                    q_make          equ     134     ;create queue
0087                    q_open          equ     135     ;open queue
0089                    q_read          equ     137     ;read queue
0088                    q_write         equ     139     ;write queue
0091                    p_priority      equ     145     ;set priority

0030                    pdlen           equ     48      ;length of Process
                                                        ;  Descriptor

0020                    p_cns           equ     byte ptr 020h   ;default cns
0012                    p_disk          equ     byte ptr 012h   ;default disk
0013                    p_user          equ     byte ptr 013h   ;default user
0024                    p_list          equ     byte ptr 024h   ;default list
0000                    ps_run          equ     0       ;PD run status
0002                    pf_keep         equ     2       ;PD nokill flag

0000                    rsp_top         equ     0       ;rsp offset
0010                    rsp_pd          equ     010h    ;PD offset
0040                    rsp_uda         equ     040h    ;UDA offset
0140                    rsp_bottom      equ     140h    ;end rsp header

0008                    qf_rsp          equ     08h     ;queue RSP flag

                        ;
                        ;       CODE SEGMENT
                        ;
                                CSEG
                                org 0

0000 CDE0               ccpm:   int ccpmint
0002 C3                         ret

                        main:           ;create ECHO queue
0003 B1856AC301                 mov cl,q_make ! mov dx,offset qd
0008 E8F5FF         0000        call ccpm
                                ;open ECHO queue
000B B1876A0903                 mov cl,q_open ! mov dx,offset qpb
0010 E8EDFF         0000        call ccpm
```

CCP/M-86 2.0 V.2
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```
                                ;set priority to normal
0013 B1918AC800                 mov cl,p_priority ! mov dx,200
0018 E8E5FF     0000            call ccpm

                                ;ES points to SYSDAT
001B 8E060000                   mov es,sdatseg

                        loop:   ;forever
                                ;read cmdtail from queue
001F B1898A0903                 mov cl,q_read ! mov dx,offset qpb
0024 E8D9FF     0000            call ccpm

                                ;set default values from PD
0027 8B1E8302                   mov bx,pdadr
                        ;       mov dl,es:p_disk[bx]    ;p_disk=0-15
                        ;       inc dl ! mov disk,dl    ;make disk=1-16
                        ;       mov dl,es:p_user[bx]
                        ;       mov user,dl
                        ;       mov dl,es:p_list[bx]
                        ;       mov list,dl
002B 268A5720                   mov dl,es:p_cns[bx]
002F 88161903                   mov console,dl

                                ;set default console
                        ;       mov dl,console
0033 B194E8C8FF 0000            mov cl,c_setnum ! call ccpm

                                ;scan cmdtail and look for "$" or 0.
                                ;when found, replace w/ cr,lf,"$"

0038 8D1E85028024               lea bx,cmdtail ! mov al,"$" ! mov ah,0
     B400
0040 8BD381C28300               mov dx,bx ! add dx,131
                        nextchar:
0046 3BDA770B   0055            cmp bx,dx ! ja endcmd
004A 38077407   0055            cmp [bx],al ! je endcmd
004E 38277403   0055            cmp [bx],ah ! je endcmd
0052 43E9F1     0046                inc bx ! jmps nextchar
                        endcmd:
0055 C6070D                     mov byte ptr [bx],13
0058 C647010A                   mov byte ptr 1[bx],10
005C C6470224                   mov byte ptr 2[bx],"$"

                                ;write command tail
0060 8D1685028109               lea dx,cmdtail ! mov cl,c_writebuf
0066 E897FF     0000            call ccpm
                                ;detach console
0069 8A161903                   mov dl,console
006D B193E88EFF 0000            mov cl,c_detach ! call ccpm
                                ;done, get next command
0072 EBAB       001F            jmps loop
```

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SER. #_____

```
                        ;
                        ;       DATA SEGMENT
                        ;

                                DSEG
                                org     rsp_top

0000 000000000000       sdatseg         dw      0,0,0
0006 000000000000                       dw      0,0,0
000C 00000000                           dw      0,0

                                org     rsp_pd

0010 00000000           pd              dw      0,0             ; link,thread
0014 00                                 db      ps_run          ; status
0015 BE                                 db      190             ; priority
0016 0200                               dw      pf_keep         ; flags
0018 4543484F2020                       db      'ECHO           ; name
     2020
001E 0400                               dw      offset uda/10h  ; uda seg
0020 0000                               db      0,0             ; disk,user
0022 0000                               db      0,0             ; load dsk,usr
0024 0000                               dw      0               ; mem
0026 00000000                           dw      0,0             ; dvract,wait
002A 0000                               db      0,0
002C 0000                               dw      0
002E 00                                 db      0               ; console
002F 000000                             db      0,0,0
0032 00                                 db      0               ; list
0033 000000                             db      0,0,0
0036 000000000000                       dw      0,0,0,0
     0000

                                org     rsp_uda

0040 0000DF010000       uda             dw      0,offset dma,0,0        ;0
     0000
0048 000000000000                       dw      0,0,0,0
     0000
0050 000000000000                       dw      0,0,0,0                 ;10h
     0000
0058 000000000000                       dw      0,0,0,0
     0000
0060 000000000000                       dw      0,0,0,0                 ;20h
     0000
0068 000000000000                       dw      0,0,0,0
     0000
0070 000000007D02                       dw      0,0,offset stack_tos,0  ;30h
     0000
0078 000000000000                       dw      0,0,0,0
     0000
0080 000000000000                       dw      0,0,0,0                 ;40h
```

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```
                ;
                0000
0088 000000000000               dw      0,0,0,0
                0000
0090 000000000000               dw      0,0,0,0                 ;50h
                0000
0098 000000000000               dw      0,0,0,0
                0000
00A0 000000000000               dw      0,0,0,0                 ;60h
                0000

                                org     rsp_bottom

0140                    qbuf    rb      131             ;Queue buffer

01C3 0000               qd      dw      0               ;link
01C5 0000                       db      0,0             ;net,org
01C7 0800                       dw      qf_rsp          ;flags
01C9 4543484F2020               db      'ECHO    '      ;name
                2020
01D1 8300                       dw      131             ;msglen
01D3 0100                       dw      1               ;nmsgs
01D5 00000000                   dw      0,0             ;dq,nq
01D9 00000000                   dw      0,0             ;msgcnt,msgout
01DD 4001                       dw      offset qbuf     ;buffer addr.

01DF                    dma     rb      128

025F CCCCCCCCCCCC       stack   dw      0cccch,0cccch,0cccch
0265 CCCCCCCCCCCC               dw      0cccch,0cccch,0cccch
026B CCCCCCCCCCCC               dw      0cccch,0cccch,0cccch
0271 CCCCCCCCCCCC               dw      0cccch,0cccch,0cccch
0277 CCCCCCCCCCCC               dw      0cccch,0cccch,0cccch
027D 0300               stack_tos dw    offset main     ; start offset
027F 0000                       dw      0               ; start seg
0281 0000                       dw      0               ; init flags

0283                    pdadr   rw      1               ; QPB Buffer
0285                    cmdtail rb      129             ; starts here
0306 0D0A24                     db      13,10,'$'

0309 0000               qpb     db      0,0             ;must be zero
030B 0000                       dw      0               ;queue ID
030D 0100                       dw      1               ;nmsgs
030F 8302                       dw      offset pdadr    ;buffer addr.
0311 4543484F2020               db      'ECHO    '      ;name to open
                2020

0319 00                 console db      0
                        ;disk   db      0
                        ;user   db      0
                        ;list   db      0
```

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```
213
214                                     end
215
216
217  END OF ASSEMBLY.  NUMBER OF ERRORS:   0.  USE FACTOR:  2%
```

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CCPM	0000 L	45#	50	53	57	65	80	100	103
CCPMINT	00E0 N	12#	45						
CDETACH	0093 N	14#	103						
CMDTAIL	0285 V	85	99	198#					
CONSOLE	0319 V	76	102	208#					
CS	SREG V								
CSETNUM	0094 N	15#	80						
CWRITEBUF	0009 N	13#	99						
DMA	01DF V	143	186#						
DS	SREG V								
ENDCMD	0055 L	89	90	91	93#				
ES	SREG V	60	75						
LOOP	001F L	62#	105						
MAIN	0003 L	48#	193						
NEXTCHAR	0046 L	88#	92						
PCNS	0020 N	25#	75						
PD	0010 V	121#							
PDADR	0283 V	68	197#	204					
PDISK	0012 N	26#							
PDLEN	0030 N	22#							
PFKEEP	0002 N	30#	124						
PLIST	0024 N	28#							
PPRIORITY	0091 N	20#	56						
PSRUN	0000 N	29#	122						
PUSER	0013 N	27#							
QBUF	0140 V	173#	184						
QD	01C3 V	49	175#						
QFRSP	0008 N	37#	177						
QMAKE	0086 N	16#	49						
QOPEN	0087 N	17#	52						
QPD	0309 V	52	64	201#					
QREAD	0089 N	18#	64						
QWRITE	008B N	19#							
RSPBOTTOM	0140 N	35#	171						
RSPPD	0010 N	33#	119						
RSPTOP	0000 N	32#	113						
RSPUDA	0040 N	34#	141						
SDATSEG	0000 V	60	115#						
SS	SREG V								
STACK	025F V	188#							
STACKTOS	027D V	155	193#						
UDA	0040 V	127	143#						

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